MAP MATHEMATICS ACHIEVEMENT LEVEL DESCRIPTORS

GRADE 3

Below Basic—450-567
Students

- use visualization to identify faces of solids
- use a ruler to measure length
- extend shapes or numbers in a repeating pattern
- use multiplication to represent a mathematical situation
- read and interpret information from a graph
- apply transformations to determine congruency of two figures
- apply transformations to determine if shapes are congruent
- compute a 2-digit addition problem
- describe the relationship between addition and subtraction of whole numbers
- recognize line of symmetry
- apply subtraction skills
- given a unit of measurement, estimate length of an object
- use number sentences to represent mathematical situations

Basic—568-627
Students

- apply computation strategies for addition and subtraction with regrouping on three-digit numbers
- interpret a simple bar graph and compare data
- sort items and organize by size
- justify and compare greater-than/less-than skills through estimation
- read a thermometer
- apply skills of counting using numbers and pictures
- read an analog clock to nearest 5 minutes
- identify and explain a rule that describes a pattern
- use a ruler to make measurements in centimeters
- order whole numbers with 3 digits
- transfer data to graph

Proficient—628-666
Students

- combine 3-dimensional objects (solids)
- apply basic multiplication facts
- identify a number sentence that represents a given situation involving a missing whole number
- organize word problems to locate missing addend; apply comprehension skills; apply skills to set up a word problem

- understand units of time and measurement
- read and interpret chart data to solve problems
- apply skills of locating and using landmark numbers
- identify odd/even numbers
- apply graph key to interpret data
- use a calendar to compute a future date based on written information
- use multiple steps to organize and sort objects
- given pictorial information write a number sentence to find a missing solution
- apply vertical addition to two- and three-digit numbers
- describe change using increase and decrease
- add monetary values together up to $5.00
- apply fraction skills to identify and locate fractional parts including halves, thirds, or fourths
- apply basic computation skills to solve division problems
- recognize attributes of 2- and 3-dimensional shapes
- read a mathematical problem and write and justify a number sentence that represents the problem
- Set up data collection to answer specific research questions
- apply reading and comprehension skills to locate key words for problem solving and application of computational skills
- apply addition/subtraction skills in order to solve problems that include up to 3-digit numbers
- apply fraction skills to identify and locate fractional parts (halves, thirds, or fourths)
- determine perimeter of polygons
- use data and map key to complete a graph
- read and apply specific information to a corresponding table or graph
- use information from a table to identify a pattern
- use a fractional parts (halves, thirds, or fourths) of a unit of measurement to estimate length
- identify the 2-dimensional faces of a 3-dimensional shape
- use data to create an appropriate graph
- identify increase or decrease using decimal numbers (money)

Advanced—667-780

Students

- identify experiences as likely or unlikely
- represent a mathematical situation as a number sentence or an expression
- apply transformations to determine congruency of two figures
- determine change that includes the use of different coins
- identify multiple lines of symmetry
- estimate and justify the results of addition and subtraction of whole numbers
- determine change from $5

MAP MATHEMATICS ACHIEVEMENT LEVEL DESCRIPTORS

GRADE 4

Below Basic—465-595
Students

- read and compare data on a bar graph
- write and compare decimals to the hundredths place
- describe the results of combining shapes
- estimate linear measurements
- complete tables
- create tables or graphs to represent categorical and numerical data
- identify fraction as a part of a whole
- identify parallel lines

Basic—596-650
Students

- transfer numerical data to a graph
- analyze patterns using words, tables, and graphs
- identify 2&3-dimensional shapes
- tell time to the nearest minute
- identify the 2-dimensional faces of a 3-dimensional shape
- given a set of data, propose and justify conclusions that are based on the data
- identify the next value in a number pattern
- analyze a pattern and draw the next shape in the pattern
- identify the results of transformations
- extend a pattern to find a specific term
- identify clocks with a specific time to the nearest minute
- use multiplication to solve problems
- use benchmarks to estimate linear measurements
- predict the results of transformations
- compute a two-digit by two-digit product
- identify the missing value in a number sentence

Proficient—651-687
Students

- Propose and justify conclusions based on data
- compare parts of a whole as a fraction and justify the answer
- identify place value (up to 6 digit whole numbers)
- read and interpret data on a line plot
- add/subtract money values up to $10.00
- describe movement on a grid, using common language - north, south, east, west, right, left, up, down

- recognize equivalent representations for the same number by decomposing and composing whole numbers, using multiple operations
- identify the correct number sentence for a mathematical situation
- analyze, interpret and explain data in a multi-step problem
- find the value of combinations of quarters, nickels, dimes, and pennies
- identify lines of symmetry
- subtract money involving dollars and cents
- describe the results of transforming shapes
- write a number sentence to represent a mathematical situation
- identify a 3-dimensional shape given its attributes
- describe and analyze data in a multi-step problem
- measure and compare, using standard and metric units
- determine the area of a figure on a rectangular grid, using standard units
- represent multiplication using sets and arrays
- identify repeated addition as a way to express multiplication
- identify the missing operation in a number sentence
- demonstrate fluency with basic operations
- apply estimation in multiplication of numbers
- analyze, interpret, and explain data
- write a number sentence to represent a mathematical situation
- use and apply estimation to add and subtract money
- divide three-digit by one-digit numbers
- describe and evaluate attributes of 2 and 3-dimensional shapes

Advanced—688-805

Students

- determine change from $10.00
- construct a figure with one line of symmetry
- determine area of a polygon on a rectangular grid
- describe geometric and numeric patterns
- explain and extend a pattern
- extend an increasing pattern with a constant rate of change
- identify problems that can be solved using similar mental strategies involving multiplication
- determine differences in measures, using standard and metric units
- use benchmarks to estimate measurement of angles
- apply two-digit by two-digit number multiplication to solve problems
- describe mathematical relationships in terms of constant rates of change
- estimate the area of a polygon on a rectangular grid
- solve problems using graphs, tables, or number sentences
- show and count combinations of items in three sets
- identify equivalent linear measures

MAP MATHEMATICS ACHIEVEMENT LEVEL DESCRIPTORS

GRADE 5

Below Basic—480-604
Students:

- order decimals to the thousandths place
- read, write, and compare unit fractions and decimals to thousandths
- make generalizations about geometric patterns
- describe the attributes of 2-dimensional shapes
- interpret and identify data in a bar graph
- label, describe, compare, and organize data in a bar graph
- make and justify predictions using data
- recognize equivalent representations of a number by composing numbers up to 5 digits
- use symmetry to complete figures and drawings
- identify data in a line graph
- interpret place value up to hundred-thousands
- determine operations used in numeric patterns

Basic—605-667
Students:

- identify place value to the millions place
- use data to create a bar graph and perform calculations using numbers between given intervals
- identify lines of symmetry
- perform multiplication of decimals to hundredths place
- identify appropriate units of area

Proficient—668-705
Students:

- interpret movement and direction on a coordinate grid
- compare and analyze data in tables
- analyze results and make conclusions based on data in a line graph
- identify similar figures
- identify missing information in performing calculations
- extend numeric patterns
- apply multiplication of decimals in mathematical situations
- solve problems involving rate
- identify faces of 3-dimensional figures
- identify appropriate units of measure
- identify number sentences to solve a problem using a single operation
- identify appropriate methods of collecting data for statistical surveys
- apply estimation strategies in computations
- interpret data from tables and charts to construct a graph

- identify the associative property
- identify operations to complete number sentences
- identify a constant rate of change using data tables
- solve problems involving lapsed time (hours)
- relate multiplication and division using 2-digit numbers
- describe the probability of an event
- draw conclusions from data
- perform long division of 3-digit numbers
- analyze geometric patterns to extend beyond given data
- determine directions, locations, and distances and label points on a coordinate grid
- use coordinate grid to write ordered pairs and describe paths
- apply addition of fractions with like denominators
- apply subtraction of money
- calculate the area of a shape on a grid to the nearest ½ square unit
- analyze numeric patterns to extend beyond given data, using multiplication
- explain the probability of an event using terms such as certain, equally likely, and impossible
- identify shapes with rotational symmetry
- identify place value of decimals
- convert time to hours, minutes, and seconds
- compare and find the difference in area of figures on a grid
- convert feet and inches to inches
- analyze characteristics of numeric patterns
- identify and model situations with constant rates of change
- identify number sentences with a letter variable to solve a problem
- determine appropriate unit of measure customary
- apply estimation strategies
- explain and justify the results of calculations involving constant rates
- identify the rule to extend a number pattern using two operations
- convert between feet and yards
- apply the inverse relationship of multiplication and division
- use addition and subtraction of money in a real-world situation
- analyze 3-dimensional figures using the attributes of edges and vertices

Advanced—706-830

Students:

- use a number sentence to represent a mathematical situation involving
- multiplication of money and/or decimals
- compute elapsed time to hours involving AM and PM
- explain how the area of a figure on a coordinate grid is determined
- analyze characteristics of and identify quadrilaterals
- identify and justify the unit of measure for area
- use a figure to identify angle measures
- use coordinate grid to interpret motion, describe paths, and determine distances

- between points
- convert ounces to pounds
- interpret and organize data involving a constant rate of change
- identify a 3-dimensional figure using a net of the figure
- identify the results of transformations

MAP MATHEMATICS ACHIEVEMENT LEVEL DESCRIPTORS

GRADE 6

Below Basic—495-627
Students

- identify 3-dimensional geometric shapes
- order integers on a number line
- describe patterns in tables and pictures
- identify properties of 1-dimensional shapes
- identify an acute, obtuse, or right angle
- read and interpret line graphs
- identify properties of 3-dimensional shapes
- compare and order integers, positive rational numbers, and percents
- identify transformations of 2-dimensional geometric shapes
- describe patterns with tables, graphs, pictures, symbolic rules or words
- read and interpret circle graphs
- identify equivalent algebraic expressions, using the associative property

Basic—628-680
Students

- use coordinate geometry to construct geometric shapes
- construct and identify 2-dimensional geometric shapes using ordered pairs
- use a model to determine a rule for a geometric pattern
- compare and explain probability results using mathematical models
- analyze and write a rule for a given numeric pattern
- generate equivalent forms of percents, fractions and decimals
- use estimation to interpret graphs

Proficient—681-720
Students

- select appropriate operations to solve problems
- determine outcome to justify probability
- interpret and complete a table based on the probability of an event
- understand and explain data in a variety of forms and representations
- apply operations to solve problems
- add and subtract positive rational numbers
- compare different representations of the same data to determine whether each representation is correct
- describe how to find the area of a rectangle
- analyze a table to determine a rule
- identify the least common multiple of three numbers
- analyze, extend, and describe the rule for a numerical pattern
- compare spatial views of 3-dimensional objects

- use a graph to determine rate of increase
- apply algebraic thinking to solve real-world problems
- apply standard and non-standard units of measure
- select the appropriate angle measure
- represent and describe patterns with tables, graphs, pictures, symbolic rules or words
- convert within a system of measure applying number operations
- find the range and measures of center using a line plot
- estimate a measurement, using standard units of measurement
- construct and identify a polygon on a coordinate grid, based on its attributes
- analyze rate of change
- determine the rate and use it to find the cost of a set of items
- describe properties of 2-dimensional geometric shapes
- use variables to represent unknown quantities
- recognize properties of 3-dimensional geometric shapes
- estimate quotients
- describe transformations
- identify and justify an angle as acute, obtuse, or right

Advanced—751-845

Students

- recognize similarities between 2-dimensional geometric shapes
- analyze and describe the solution to an algebraic equation
- use properties of basic geometric figures to draw conclusions about angle size
- interpret a stem-and-leaf plot
- interpret circle graphs to find percents of whole numbers
- solve problems involving elapsed time, using minutes and hours
- design studies and collect data about a characteristic
- describe how to find the area of a triangle
- use a sample to find the possible outcomes of an event
- find the approximate location of a number on a number line
- interpret data to solve problems
- estimate within a standard measure system multiple conversions
- find and apply the concepts of range and central tendency
- apply formula for perimeter to justify answer
- identify properties of 3-dimensional isometric shapes
- estimate the area of a figure using a coordinate grid

MAP MATHEMATICS ACHIEVEMENT LEVEL DESCRIPTORS

GRADE 7

Below Basic—510-639
Students

- use and interpret information from bar graphs
- place integers in the correct order on a number line
- identify a shape from a group of 2-dimensional shapes based on a specific property
- analyze precision and accuracy using measurements tools
- apply operations to solve problems
- predict outcomes using common probabilities
- distinguish between and use appropriate graphical representations of data from bar graphs, circle graphs, stem-and-leaf plots, and box-and-whisker plots
- apply transformations to a 2-dimensional shape
- identify the unit of measure for volume

Basic—640-684
Students

- analyze patterns represented numerically or graphically
- identify the base and exponent of numbers written in exponential notation
- solve 2-step problems involving adding and subtracting of money
- multiply and divide positive rational numbers
- use variables to represent and solve unknown quantities in equations and inequalities
- recognize equivalent representations of the same number
- read and interpret graphs to compare data

Proficient—685-723
Students

- determine probability
- describe and classify 2- and 3-dimensional shapes based on their properties
- solve problems involving time
- read and write whole numbers up to the hundred millions place
- create and use a circle graph
- recognize, compare, and apply patterns
- solve problems involving area
- apply transformations to reposition shapes on a grid
- compare and order integers, positive rational numbers, and percents
- multiply decimals
- calculate measures of center
- using spatial reasoning to estimate area
- subtract mixed numbers
- use models to solve problems
- use factors to describe a relationship between and among numbers

- solve problems involving proportion and scale
- identify and justify an angle as acute, obtuse, straight, or right
- use fractions, decimals, and percents to solve problems
- select and use appropriate graphical information
- interpret and apply information from a chart or table
- interpret a pattern from a bar graph and apply the pattern to predict the next item in the sequence
- model a situation with an equation using variables
- create or use a circle graph to recognize the relationship of parts to a whole

Advanced—724-860

Students

- convert capacity from one unit to another within a system of measurement
- plot ordered pairs on a coordinate plane and identify geometric shapes based on its properties
- make conversions using proportions
- recognize and extend a non-linear pattern or use recursive notation to extend the pattern
- solve problems using time conversions
- describe the relationships between a shape and its dilation, contraction, or magnification using scale factor on a grid
- find the approximate circumference and/or area of a circle
- determine lines of symmetry of natural or man-made items
- calculate totals involving percents in multi-step problems
- represent situations using inequalities
- interpret multiple representations such as tables, graphs, and equations to solve problems
- select an appropriate random sample
- describe and apply the relationships of corresponding angles or sides in similar polygons
- identify and analyze the properties of 2- and 3-dimensional shapes by describing their attributes
- solve problems involving constant rates of change
- determine the range for a set of data

MAP MATHEMATICS ACHIEVEMENT LEVEL DESCRIPTORS

GRADE 8

Below Basic—525-669
Students

- read and interpret information displayed in a bar graph
- order rational numbers on a number line
- generalize patterns represented numerically
- generalize relationships between the attributes of 2-dimensional shapes
- describe how to solve problems involving area
- find the mean value of a data set
- use information to select an appropriate graphical representation of data
- represent information on a bar graph
- identify the results of subdividing 3-dimensional shapes
- interpret data presented in words, charts, tables, or graphs
- use a scale to estimate distance
- identify a 3-dimensional figure using a 2-dimensional net of the figure
- make conjectures based on theoretical probability about the results of experiments

Basic—670-709
Students

- solve a one-step linear equation
- identify relationships in 3-dimensional objects using their properties
- extend geometric patterns
- make conjectures based upon the results of an experiment
- calculate the theoretical probability of an event
- apply operations on rational numbers
- generalize patterns to find a term
- interpret a scatter plot to determine the relationship between two variables
- solve and interpret linear equations

Proficient—710-740
Students

- solve multi-step equations
- identify formal transformations
- solve problems involving area
- calculate measures of center for a given data set
- given a diagram, identify and classify angles
- identify appropriate units of measure
- interpret graphic organizers
- identify equivalent representations of a number
- convert equivalent units of measure within the same system of measurement

- generalize a symbolic pattern
- apply all operations on rational numbers
- identify 2-dimensional objects by analyzing their properties
- use area and perimeter to solve problems
- use symbolic algebra to represent and solve problems that involve linear relationships, including recursive notation
- create similar polygons by applying the relationships of corresponding sides and angles
- identify the probability of an event
- identify problems that can be solved using similar mental strategies
- estimate and justify the results of all operations on rational numbers
- convert standard units within a system of measurement
- analyze the relationship of two variables in a table
- use coordinate geometry to determine the area of quadrilaterals
- identify a repositioned object after formal transformations
- analyze the probability for a specific outcome of an event
- identify the appropriate multi-step linear equation to represent a given situation
- identify missing terms of a pattern
- use and interpret measures of central tendency for a given data set

Advanced—741-885

Students

- analyze calculations using formulas for errors
- analyze the nature of changes in slope and intercept in the graphs of linear equations
- apply Pythagorean Theorem using coordinate geometry
- identify polygons, based on their attributes
- estimate the value of square roots
- solve two-step inequalities
- write numbers using scientific notation
- identify coordinates of vertices of a transformed polygon
- select, create, and use appropriate graphical representation of data
- use a protractor to measure a complementary angle
- solve problems involving surface area

MAP MATHEMATICS ACHIEVEMENT LEVEL DESCRIPTORS

GRADE 10

Below Basic—555-694
Students

- use the rules of exponents to generate equivalent numbers
- identify the domain and/or range of a function
- determine the volume of a basic geometric figure
- use and apply constructions to represent reflections of objects
- use visual models to represent 3-dimensional figures
- use a diagram to estimate measurements
- predict outcome based on probability
- extend a simple numerical pattern and generalize with an expression

Basic—695-737
Students

- select, create, and use appropriate graphical representation of data
- identify characteristics of a survey and sample group
- apply mental computation using real numbers
- determine an equation which identifies a quantitative relationship
- apply and use symbolic algebra to represent and solve problems
- extend a pattern
- solve for angles of parallel lines cut by a transversal
- calculate the central tendencies for a set of data
- describe the relationships of angles formed by a transversal and parallel lines
- apply algebraic relationships to solve problems

Proficient—738-784
Students

- evaluate an algebraic expression
- apply proportions to solve real-world problems
- use visual models to solve problems
- apply statistical concepts to solve problems
- identify an appropriate mathematical model (algebraic equations, inequalities, and graphs) based on given data in a real world context
- apply mental computations to real numbers
- analyze and solve problems involving objects on a coordinate plane
- analyze the precision of computations
- generalize patterns using explicit notation
- identify the type of function represented in an equation graph or table
- use unit analysis to solve problems
- extend a pattern from tables and graphs
- calculate volume

- solve area problems
- describe the shape of the distribution of data
- solve problems involving quadratics
- apply relationships of similar polygons to determine coordinates
- justify estimates based on data
- evaluate data to predict future outcomes
- identify equivalent algebraic expressions
- determine the volume of cylinders and cones
- use proportional reasoning to solve conversion and rate problems
- use graphic organizers to solve problems

Advanced—785-910

Students

- use real numbers to solve problems
- use symbolic algebra to represent and solve problems
- apply formulas needed to solve problems in a coordinate plane
- use the relationships of angles formed by parallel lines cut by a transversal to solve problems
- apply relationships of similar polygons to compare area
- determine compound probability
- write equations that represent situations
- use properties of exponents to simplify an expression
- evaluate and describe the accuracy of graphical representation
- identify an appropriate equation to represent a situation
- understand and compare the linear properties of functions